

## Customized Feeding Aid for Patients with Parkinson's Disease

Shreya Colvenkar<sup>1</sup>, Ramesh Kunusoth<sup>2</sup>, Pawan Kumar<sup>3</sup>, Rathod Prakash<sup>4</sup>,  
Aditya Mohan<sup>5</sup> & Jayasri Vanapalli<sup>6</sup>

<sup>1,3</sup>Department of Prosthodontics, <sup>2,4,5</sup>Department of Oral and Maxillofacial Surgery, <sup>6</sup>Department of Oral Medicine and Radiology, <sup>1-6</sup>MNR Dental College and Hospital, Sangareddy, Telangana, India.

DOI: <https://doi.org/10.46382/MJBAS.2023.7111>



**Copyright:** © 2023 Shreya Colvenkar et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Article Received: 29 January 2023

Article Accepted: 28 February 2023

Article Published: 30 March 2023

### ABSTRACT

Parkinson's is an age-related neurological disorder that causes tremors, muscle stiffness and shaking hands. Self-eating is one activity impacted by this disease. Slender handles of conventional utensils make holding a cumbersome task. The customized cutlery with increased diameter allows better grip, making easier to eat independently. This article describes a simple, cheap and quick method of fabricating a customized cutlery from materials readily available in dental office.

**Keywords:** Parkinson's disease; Customized feeding aid; Neurological disorder; Polymerization.

### 1. Introduction

Parkinson's disease is an age-related neurodegenerative disorder attributed to reduction in dopamine production. The most common symptoms experienced with Parkinson's disease consists of tremors, muscle stiffness, slowness of movement and impaired balance and coordination leading to falls.

The frequency and severity of symptoms vary among everyone [2]. It is estimated that by 2040, new 700,000 cases of Parkinson's disease are expected to be diagnosed [2].

Eating food can become a task rather than fun activity in patients having tremors and muscle stiffness and [3],[4]. Patients with Parkinson's find difficulty in handling utensils.

Adaptive feeding aids consisting of swivel spoon, lift ware steady TM spoon, weighted spoons, built up handle weighted spoon were developed to deal with different demands of people with Parkinson's disease [3],[4]. Literature search mentions that weighted cutlery is the best option for patients with Parkinson's disease [3],[4].

This technical report describes a simple, single-visit chairside technique to customize feeding cutlery with rubber-based material for patients with Parkinson's disease. The design customized to patients' hands and fingers will make eating easier.

### 2. Technical Report

Before start of the procedure, receive patient with calm and caring attitude. Explain the patient the procedure to be carried out. Knead equal number of scoops of silicone putty impression material (Photosil Soft Putty, Dental Products of India, Mumbai, India) until uniform color is obtained. Mold it around the feeding aid.

Request the patient to gently squeeze the material in such a way that its comfortable to hold the feeding aid to eat (Figure 1).



**Figure 1.** Silicone putty impression material molded by the patient around the cutlery A-fork B-spoon

Once polymerization is complete, remove excess with a scalpel blade (Figure 2).



**Figure 2.** Molded silicone putty impression material around the spoon and fork

### 3. Discussions

Parkinson's disease can cause limitation in performing daily activities like eating, brushing, and holding objects. Parkinson's patients require more time as well as effort while eating food [1]. The eating becomes a chore especially in patients suffering from tremors. In a study evaluated by Yuen and colleagues concluded that tremors cause frustration, social isolation, embarrassment and even depression [5]. Le et al., in his study concluded that 56.9% subjects find difficulty in holding spoon during meals [6].

Brach and his colleagues concluded that the use of a traditional cutlery is often difficult because it requires greater range of motion while manual gripping [7]. Hence adapted cutlery with larger diameter handle can be best solution. Self-feeding will create sense of independence and autonomy for people with Parkinson's disease [8].

Weighted cutlery helps in better execution of feeding activity because it reduces tremors [4]. Tremors were reduced due to association between the biomechanical effect and the proprioceptive input. But care should be

taken that weight should be specific to each person depending on performance and functional complaints. Various studies have emphasized that increase in handle diameter and weight improve feeding satisfaction as well as performance [3],[4],[8].

Literature search mentions cutlery with large diameter handles, but none of them are customized to patient's fingers and hands. This article mentions a quick technique to customize the cutlery to patient's hands and fingers. Silicone putty impression material, which is cheap, quick, and easily available in dental office has been used for modification of cutlery. Silicone putty can be adapted in any form depending on patients need. A wider handle will allow easy grip on the cutlery, thus making eating easier. Manipulation of putty is easy, so it can be done chairside by a dentist or even at patients home in a single visit. Dickinson C, Millwood J have used silicone putty impression material to customize the handle of toothbrush [9]. The material is rubber based so it will allow better grip. Handle can also be washed if needed but cannot be cleaned in dishwasher. The slight weight of the handle can give a better tactile feel to the patients with severe tremors. The handle also can be processed in heat cure acrylic denture base resin in future.

Further research needs to be carried to understand its impact on patients eating habit and how it would help them to perform duties on its own.

#### 4. Conclusions

This article describes an easy method to customized feeding aid for patient with Parkinson's disease. A wider handle allows easy grip on the cutlery. Manipulation of material can be made chairside by a dentist or even at patients home in a single visit. The main advantage is that it can be customized to patients' hands and fingers. The technique is very simple and requires less time compared to other techniques.

#### **Declarations**

#### **Source of Funding**

This research work did not receive any grant from funding agencies in the public or not-for-profit sectors.

#### **Conflict of Interests**

The authors declare the total absence of conflicts of interest, both during the conduct of the experiments and during the written drafting of this work.

#### **Consent for Publication**

The authors declare that they consented to the publication of this research work.

#### **References**

- [1] Opara J., Broła W., Leonardi M., et al. (2012). Quality of life in Parkinson's Disease. *Journal of Medicine and Life*, 5: 375-381.
- [2] Rossi A., Berger K., Chen H., et al. (2018). Projection of the prevalence of Parkinson's disease in the coming decades: Revisited. *Movement Disorders*, 33: 156-159.

- [3] Ma HL., Hwang WJ., Chen-Sea MJ., et al. (2008). Handle size as a task constraint in spoon-use movement in patients with Parkinson's disease. *Clin Rehabil.*, 22: 520-528.
- [4] Sabari J., Stefanov DG., Chan J., et al. (2019). Adapted Feeding Utensils for People with Parkinson's-Related or Essential Tremor. *Am J Occup Ther.*, 73: 7302205120.
- [5] Yuen H., D'Amico M. (1998). Improved feeding ability in adults with acquired brain damage: Two case studies. *Australian Occupational Therapy Journal*, 45: 43-47.
- [6] Lee CS., Schulzer M., Mak EK., et al. (1994). Clinical observations on the rate of progression of idiopathic parkinsonism. *Brain*, Pages 501-507.
- [7] Brach JS., Van Swearingen JM., Newman AB., et al. (2002). Identifying early decline of physical function in community-dwelling older women: performance-based and self-report measures. *Phys Ther.*, 82: 320-328.
- [8] McDonald SS., Levine D., Richards J., et al. (2016). Effectiveness of adaptive silverware on range of motion of the hand. *Peer J.*, 15: 1667.
- [9] Dickinson C., Millwood J. (1999). Toothbrush handle adaptation using silicone impression putty. *Dent Update.*, 26: 288-289.